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A synopsis of the New England species of Tetmemorus

JOSEPH AUGUSTINE CUSHMAN

With the present records all four species of *Tetmemorus* found in the British Isles are known from New England. The species of *Tetmemorus* are not striking in their appearance and one studying plankton rarely meets with them. In New England the species appear to be mostly found in sphagnum pools and also as a rule seem to be more common at an elevation, being found very abundantly in certain mountain ponds with sphagnous borders.

The figures given by Wolle were poor and in some cases were referred to the wrong species. The corrected synonymy for the various species is given. The measurements are from New England specimens only. Records for which specimens have been seen are followed by an exclamation point. While based upon New England material this should cover the whole northeastern United States.

TETMEMORUS Ralfs, 1844

Cells usually fusiform-cylindrical, straight, with a slight median constriction, and a narrow incision at the center of the apices: cell circular or elliptical in end view: cell-wall usually punctate or slightly scrobiculate: each semicell with a single chloroplast, with a central row of pyrenoids.

1. TETMEMORUS BRÉBISSONII (Menegh.) Ralfs

Closterium Brébissonii Menegh. Linnaea **14**: 236. 1840.

Tetmemorus Brébissonii Ralfs, Ann. Mag. Nat. Hist. **14**: 257. *pl. 8. f. 1.* 1844. — Brit. Desm. 145. *pl. 24. f. 1, a, b, c.* 1848. — Wolle, Desm. U. S. 91. *pl. 20. f. 1, 2. pl. 50. f. 36.* 1884.

Cells subcylindrical, attenuate toward the apices, much more so in side view, about 6 times as long as wide; apices broadly rounded in both front and side views; cell-wall minutely punctate in longitudinal lines; chloroplasts with 4–5 pyrenoids.

Length 189–236 μ: breadth 34–37 μ: isthmus 20–31 μ.

MAINE: Orono (*W. West*). NEW HAMPSHIRE: North Woodstock! MASSACHUSETTS: Guilder Pond, Mt. Everett, Mount

Washington ! Lake Quinsigamond, Worcester (*Stone*) ; Tewksbury (*Lagerheim*) ; Waverley (*Johnson*) ; Bridgewater ! Lake Watuppa, Fall River ! RHODE ISLAND : Wainskut Pond, North Providence (*Bailey*).

2. TETMEMORUS GRANULATUS (Bréb.) Ralfs

Closterium granulatum Bréb., in Cheval. Microscop. et Usage 272. 1839.

Tetmemorus granulatus Ralfs, Ann. Mag. Nat. Hist. **14** : 257. *pl. 8. f. 2.* 1844. — Brit. Desm. 147. *pl. 24. f. 2. pl. 33. f. 1.* 1848. — Wolle, Desm. U. S. 91. *pl. 50. f. 33, 34.* 1884.

Cells decidedly attenuate toward the apices in both front and side views, about 5½ times as long as wide ; apices narrowly rounded ; cell-wall scrobiculate in encircling lines at the base of the semicell, becoming irregular and more crowded toward the apex ; chloroplasts with 4–5 pyrenoids.

Length 168–260 μ : breadth 34–46 μ : isthmus 22–38 μ.

MAINE : Orono (*W. West*). NEW HAMPSHIRE : Pudding Pond, North Conway ! Intervale ! Noone's Station ! North Woodstock ! MASSACHUSETTS : Guilder Pond on Mt. Everett, Mount Washington ! Lake Quinsigamond, Worcester (*Stone*) ; Tewksbury (*Lagerheim*) ; Pondville ! Lake Watuppa, Fall River ! Wigwam and Almanac Ponds, Nantucket ! RHODE ISLAND : Providence (*Bailey*).

3. TETMEMORUS LAEVIS (Kütz.) Ralfs

Closterium laeve Kütz. Phyc. Germ. 132. 1845.

Tetmemorus laevis Ralfs, Brit. Desm. 146. *pl. 24. f. 3.* 1848. — Wolle, Desm. U. S. 91. *pl. 20. f. 3. pl. 50. f. 35.* 1884.

Tetmemorus minutus Wolle, *pl. 20. f. 7–9.* 1884.

Cells subcylindrical, about 4 times as long as wide, gradually attenuate to the apices, which are broadly rounded; cell-wall minutely punctate; chloroplasts with 3–5 pyrenoids.

Length 70–127 μ : breadth 19–23 μ : isthmus 17–19 μ.

MAINE : Orono (*W. West*). MASSACHUSETTS : Lake Quinsigamond, Worcester (*Stone*) ; East Bridgewater ! Lake Watuppa, Fall River ! Sandwich ! Chilmark ! Nantucket !

4. TETMEMORUS MINUTUS DeBary.

Tetmemorus minutus DeBary, Conj. 41. *pl. 5. f. 10.* 1858.

Cells attenuate toward the apices in both front and side views, more so in the latter, about 3 times as long as wide ; apices broadly rounded; cell-wall slightly punctate ; chloroplasts with 1 or 2 pyrenoids.

Length 65 μ: breadth 19 μ.

MASSACHUSETTS : Guilder Pond, on Mt. Everett, 600 meters, Mount Washington !

A key to the New England species of Tetmemorus

Cells large, usually 5 times as long as wide; cell-wall scrobiculate or punctate in a definite pattern, at least near the base of the semicells.

- Scrobiculations or punctulations in definite longitudinal lines ; cells very slightly attenuate from base to apex. 1. *T. Brébissonii.*
- Scrobiculations in horizontal lines at the base of the semicell, elsewhere scattered, gradually attenuate from base to apex. 2. *T. granulatus.*

Cells smaller, less than 5 times as long as wide ; cell-wall irregularly punctate.

- Cells about 4 times as long as wide ; chloroplast with 3–5 pyrenoids. 3. *T. laevis.*
- Cells about 3 times as long as wide ; chloroplasts with 1 or 2 pyrenoids. 4. *T. minutus.*

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